

## Message Text

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PAGE 01 MOSCOW 19631 161928Z  
ACTION OES-06

INFO OCT-01 EUR-12 ISO-00 EB-07 COME-00 NSF-02 CIAE-00  
INR-07 NSAE-00 /035 W  
----- 032394 /44

P 161418Z DEC 76  
FM AMEMBASSY MOSCOW  
TO SECSTATE WASHDC PRIORITY 2152

UNCLAS MOSCOW 19631

E.O. 11652: N/A

TAGS: TGEN, PFOR, ENRG, UR, US

SUBJ: US-USSR S&T AGREEMENT: JOINT COMMISSION MEETING (01.00)  
PREPARATIONS--SOVIET REPORT ON PHYSICS (01.08)

REF: (A) STATE 301475 (B) MOSCOW 19487

1. PER REQUEST REFTEL (A), THERE FOLLOWS INFORMAL TRANSLATION OF SOVIET DRAFT REPORT ON PHYSICS (01.08). BEGIN QUOTE: THERE ARE A NUMBER OF PROBLEMS IN MODERN PHYSICS, SOLUTION TO WHICH ARE OF GREAT PRACTICAL IMPORTANCE. AMONG THEM ARE, IN PARTICULAR, HIGH-TEMPERATURE SUPERCONDUCTIVITY, INTERACTION OF LASERS WITH MATTER AND A NUMBER OF ACTUAL PROBLEMS OF RELATIVISTIC ASTROPHYSICS. IT IS WELL KNOWN THAT AMERICAN AND SOVIET SCIENTISTS TAKE THE LEADING ROLE IN SOLVING THESE PROBLEMS. THE SAME RANGE OF PROBLEMS AND THE SCALE AND HIGH SCIENTIFIC LEVEL OF INVESTIGATIONS BEING CONDUCTED IN BOTH COUNTRIES CREATE NATURAL PREREQUISITES FOR ORGANIZATION OF COOPERATION BETWEEN SOVIET AND AMERICAN PHYSICISTS. ONE MAY EXPECT SUCH COOPERATION WILL ENABLE USING MOST EFFECTIVELY SCIENTIFIC ACHIEVEMENTS OF EACH SIDE, FACILITATING AND ACCELERATING EXCHANGE OF INFORMATION IMPORTANT FOR SUCCESSFUL DEVELOPMENT OF WORK, AND ELIMINATING DUPLICATION OF THE INVESTIGATIONS IN BOTH COUNTRIES.  
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2. IN ANALYZING THE RESULTS OF COOPERATION OF PHYSICISTS FOR THE YEARS PAST, IT IS NECESSARY TO POINT OUT THE IMPORTANT ROLE WHICH REGULARLY-HELD US-USSR SYMPOSIA ON SOLID-STATE THEORY HAVE PLAYED. THE FIRST SYMPOSIUM WAS HELD IN MOSCOW IN 1968, THEN SUCH SYMPOSIA WERE

HELD, IN TURN, IN THE USA (1970, 1972, 1976), AND IN THE USSR (1968, 1971, 1974). THE SIXTH SYMPOSIUM IN OCTOBER OF THE CURRENT YEAR WAS HELD IN CAMBRIDGE IN THE USA. USUALLY, THE SYMPOSIA WERE FOLLOWED BY VISITS TO LEADING LABORATORIES AND BY FAMILIARIZATION WITH ORGANIZATIONS OF EXPERIMENTAL RESEARCH.

3. SYMPOSIA ON THE SOLID-STATE THEORY PLAYED AN IMPORTANT ROLE AT THE FIRST STAGE OF THE US-USSR CO-OPERATION IN THE FIELD OF PHYSICS. THEY FURTHERED WORKING CONTACTS BETWEEN LEADING THEORISTS OF BOTH COUNTRIES WORKING ON SOLUTIONS OF LIKE SCIENTIFIC PROBLEMS, AND DEMONSTRATED THE EXPEDIENCY OF SUCH CONTACTS. MANY IMPORTANT RESULTS IN THE FIELD OF THE SOLID-STATE THEORY WERE REPORTED FOR THE FIRST TIME AT THE SYMPOSIA, WHICH INFLUENCED THE DEVELOPMENT OF THIS DIRECTION OF SCIENCE. WE NOTE WORK ON THE PHASE TRANSITION THEORY (WILLSON, POLYAKOV, MIGDALL), UNIDIMENSIONAL SYSTEMS THEORY (LUTHER), FLUCTUATION PHENOMENA IN SUPERCONDUCTORS (LARKIN, ASLAMAGOV) AND THEORY OF POLARIZATION OF ELECTRONS AND NUCLEI BY LIGHT IN SEMICONDUCTORS (DYAKONOV).

4. THE SOVIET-AMERICAN SYMPOSIA SHOWED THAT THERE WERE PREREQUISITES FOR DEEPENING THE SCIENTIFIC COOPERATION AND SWITCHING TO NEW FORMS, IN PARTICULAR, TO ORGANIZATION OF JOINT RESEARCH ON A NUMBER OF IMPORTANT PROBLEMS OF MODERN PHYSICS. THE SYMPOSIA HELPED IN DETERMINING THE RANGE OF SUCH PROBLEMS. IN ORDER TO WORK OUT CONCRETE RECOMMENDATIONS

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ON DEVELOPMENT OF COOPERATION BETWEEN THE USSR ACADEMY OF SCIENCES AND THE U.S. NATIONAL ACADEMY OF SCIENCES, BOTH ACADEMIES HAVE ASSIGNED EXPERTS. THE FIRST EXPERTS' MEETING TOOK PLACE IN ASPEN, USA, IN JULY 1975. AS THE FIRST STEP, EXPERTS PROPOSED TO ORGANIZE RESEARCH GROUPS OF SCIENTISTS FROM BOTH COUNTRIES FOR WORK ON PROBLEMS OF "UNIDIMENSIONAL SUPERCONDUCTIVITY" AND "RELATIVISTIC ASTROPHYSICS."

5. THIS WAS THE SITUATION IN OCTOBER 1975, WHEN THE FOURTH SESSION OF THE US-USSR JOINT COMMITTEE ON SCIENTIFIC AND TECHNOLOGICAL COOPERATION TOOK PLACE. A REPORT ABOUT THE STATE OF THE QUESTION AND SUGGESTIONS OF EXPERTS ON DEVELOPMENTS OF THE COOPERATION WERE SUBMITTED TO THE COMMITTEE. THE COMMITTEE APPROVED OF THE EXPERTS' WORK AND RECOMMENDED CONDUCTING JOINT RESEARCH WITHIN THE FRAMEWORK OF SOVIET-AMERICAN RESEARCH GROUPS AS THE NEXT STEP IN

DEVELOPMENT OF THE COOPERATION IN THE FIELD OF PHYSICS. THE COMMITTEE CHARGED REPRESENTATIVES OF BOTH ACADEMIES OF SCIENCES WITH DETERMINING THE RANGE OF QUESTIONS ON WHICH CARRYING OUT JOINT RESEARCH WOULD BE ADVISABLE. AS A RESULT OF THE TALKS DURING THE FIRST HALF OF 1976, IT WAS RECOMMENDED TO FORM JOINT SOVIET-AMERICAN RESEARCH GROUPS ON THE FOLLOWING FIVE PROBLEMS:

- (A) SUPERCONDUCTIVITY OF UNIDIMENSIONAL SYSTEMS;
- (B) SPACE SOURCES OF X-RAYS;
- (C) INTERACTION OF LASER EMISSION WITH MATTER;
- (D) SUPERFLUIDITY OF HELIUM-3;
- (E) METALLIC HYDROGEN;

6. IN OCTOBER 1976 IN MOSCOW, THE MEETING OF SOVIET AND AMERICAN SCIENTISTS-PARTICIPANTS IN WORK ON THEME "SPACE SOURCES OF X-RAYS" TOOK PLACE. THE UNCLASSIFIED

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PARTICIPANTS CONFIRMED THE EXPEDIENCY OF JOINT INVESTIGATIONS ON THE PROBLEM AND PROPOSED TO ORGANIZE A WORKING SEMINAR OF THE RESEARCH GROUP IN THE USSR IN THE SUMMER OF 1977.

7. IN THE SAME MONTH IN THE USA, THE MEETING OF MEMBERS OF RESEARCH GROUPS ON UNIDIMENSIONAL SUPERCONDUCTIVITY AND SUPERFLUIDITY OF HELIUM-3 TOOK PLACE. AT THE MEETING, AN AGREEMENT TO HOLD A WORKING SEMINAR OF THE RESEARCH GROUPS IN THE USA WITHIN TWO MONTHS WAS ACHIEVED. THE PARTICIPANTS OF THE MEETING WORKED OUT A DETAILED PROGRAM OF JOINT WORK BASED, IN THE MAIN, ON THE RESULTS OF THE SIXTH SYMPOSIUM ON THE SOLID-STATE THEORY. THE QUESTIONS ON GENERAL PRINCIPLES OF WORK OF RESEARCH GROUPS ON PHYSICS WAS ALSO DISCUSSED. THE DESIRABILITY OF INCLUSION IN JOINT RESEARCH GROUPS TWO OR THREE PHYSICISTS-EXPERIMENTERS IS ONE OF THE CONCRETE RECOMMENDATIONS. IT WAS ALSO STATED THAT THEMES AND COMPOSITIONS OF WORKING GROUPS SHOULD BE COORDINATED IN ADVANCE, IF POSSIBLE.

8. IN OCTOBER 1976, TALKS TOOK PLACE BETWEEN REPRESENTATIVES OF THE SOVIET ACADEMY AND THE U.S.N.A.S. ON QUESTIONS OF FORMING JOINT RESEARCH GROUPS ON LASER INTERACTION AND METALLIC HYDROGEN. THEY OUTLINED THE RANGE OF PROBLEMS AND PLANNED MEETINGS OF MEMBERS OF RESEARCH GROUPS IN MOSCOW IN THE SPRING OF 1977. RECOMMENDATIONS ON CONCRETE THEMES AND COMPOSITIONS OF SOVIET-AMERICAN RESEARCH GROUPS ON THE ABOVE-MENTIONED

PROBLEMS SHOULD BE THE RESULTS OF THESE MEETINGS.

9. IN SUMMING, UP, ONE MAY SAY THAT A CERTAIN SUCCESS  
WAS ACHIEVED IN THE SOVIET-AMERICAN COOPERATION IN THE  
FIELD OF PHYSICS. THE COOPERATION IS SUCCESSFULLY DE-  
VELOPING IN THE DIRECTION OF ORGANIZING JOINT INVESTI-  
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GATIONS IN A NUMBER OF A TUAL AREAS. IT HAS BECOME  
APPARENT THAT COOPERATION IS MUTUALLY ADVANTAGEOUS,  
PROMOTES ACCELERATION OF WORK DEVELOPMENT, AND ELIMINATES  
DUPLICATION OF WORK IN BOTH COUNTRIES. IT IS TOO EARLY  
TO SPEAK ABOUT CONCRETE RESULTS IN COLVING THE VARIOUS  
PROBLEMS. WORKING SEMINARS, WHICH WILL BE HELD IN THE  
USSR AND THE USA IN 1977, WHOUDL BECOME THE FIRST PRACTICAL  
EXPERIENCE IN JOINT RESEARCH WORK. THE HIGH SCIENTIFIC  
LEVEL OF PARTICIPANTS OF SOVIET-AMERICAN RESEARCH GROUPS  
ALLOWS HOPE THAT WORK OF THESE GROUPS WILL BE A SUB-  
STANTIAL CONTRIBUTION TO SOLUTIONS OF THE MOST  
IMPORTANT PROBLEMS OF MODERN PHYSICS. END QUOTE.

10) PLEASE ADVISE IF ORIGINALS OF OTHER REPORTS NOT YET RECEIVED.  
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## Message Attributes

**Automatic Decaptioning:** X  
**Capture Date:** 01 JAN 1994  
**Channel Indicators:** n/a  
**Current Classification:** UNCLASSIFIED  
**Concepts:** AGREEMENTS, SCIENTIFIC COOPERATION, SCIENTIFIC MEETINGS, TECHNOLOGICAL EXCHANGES  
**Control Number:** n/a  
**Copy:** SINGLE  
**Draft Date:** 16 DEC 1976  
**Decaption Date:** 01 JAN 1960  
**Decaption Note:**  
**Disposition Action:** n/a  
**Disposition Approved on Date:**  
**Disposition Authority:** n/a  
**Disposition Case Number:** n/a  
**Disposition Comment:**  
**Disposition Date:** 01 JAN 1960  
**Disposition Event:**  
**Disposition History:** n/a  
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**Disposition Remarks:**  
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**Document Source:** CORE  
**Document Unique ID:** 00  
**Drafter:** n/a  
**Enclosure:** n/a  
**Executive Order:** N/A  
**Errors:** N/A  
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**Legacy Key:** link1976/newtext/t19761237/aaaabfsu.tel  
**Line Count:** 196  
**Locator:** TEXT ON-LINE, ON MICROFILM  
**Office:** ACTION OES  
**Original Classification:** UNCLASSIFIED  
**Original Handling Restrictions:** n/a  
**Original Previous Classification:** n/a  
**Original Previous Handling Restrictions:** n/a  
**Page Count:** 4  
**Previous Channel Indicators:** n/a  
**Previous Classification:** n/a  
**Previous Handling Restrictions:** n/a  
**Reference:** 76 STATE 301475, 76 MOSCOW 19487  
**Review Action:** RELEASED, APPROVED  
**Review Authority:** schwenja  
**Review Comment:** n/a  
**Review Content Flags:**  
**Review Date:** 18 JUN 2004  
**Review Event:**  
**Review Exemptions:** n/a  
**Review History:** RELEASED <18 JUN 2004 by hattaycs>; APPROVED <25 AUG 2004 by schwenja>  
**Review Markings:**

Margaret P. Grafeld  
Declassified/Released  
US Department of State  
EO Systematic Review  
04 MAY 2006

**Review Media Identifier:**  
**Review Referrals:** n/a  
**Review Release Date:** n/a  
**Review Release Event:** n/a  
**Review Transfer Date:**  
**Review Withdrawn Fields:** n/a  
**Secure:** OPEN  
**Status:** NATIVE  
**Subject:** US-USSR S&T AGREEMENT: JOINT COMMISSION MEETING (01.00) PREPARATIONS--SOVIET REPORT ON PHYSICS (01.08)  
**TAGS:** TGEN, PFOR, ENRG, UR, US  
**To:** STATE  
**Type:** TE  
**Markings:** Margaret P. Grafeld Declassified/Released US Department of State EO Systematic Review 04 MAY 2006